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Upon the Relative Agency of Glaciers and Sub-glacial Streams in the Erosion of Valleys. By W. H. Niles. Boston, 1878. (From the Proceedings of the Boston Society of Natural History, Vol. xix.) 8vo, pp. 6.

Upon the Occurrence of Zones of Different Physical Features upon the Slopes of Mountains. By W. H. Niles. Boston, 1878. (From the Proceedings of the Boston Society of Natural History, Vol. xix.) 8vo, pp. 7.

Ueber Dimorphismus und Variation einiger Schmetterlinge Nord-Amerikas. Von J. Boll, in Dallas, Texas, 1876. Separatabdruck aus Verhandlungen des Vereins für Naturwissenschaftliche Unterhaltung in Hamburg (1876). Bd. iii. Hamburg, Marz-April, 1878. 8vo, pp. 10. From the author.

On the Nauplius Stage of Prawns. By C. Spence Bate. (From the Annals and Magazine of Natural History for July, 1878.) 8vo, pp. 7.

On the Mollusca procured during the "Lightning" and Porcupine Expeditions, 1868-70 (Part i). By J. Gwyn Jeffreys. (From the Proceedings of the Zoological Society of London, April 16, 1878.) 8vo, pp. 23, 2 plates.

Isthmia nervosa, a study of its Modes of Growth and Reproduction. By J. D. Cox. Illustrated. (Reprinted from the American Jour. of Microscopy.) 8vo, pp. 10.

The Illinois State Laboratory of Natural History, Normal Ill. Circular of Information, Springfield, July, 1878. 8vo, pp. 12.

Recensio systematici animalium Bryozoorum, quæ in itineribus, annis 1875 et 1876, ad insulas Novaja Semlja et ad ostium fluminis Jenisei, duce Professore A. E. Nordenskiöld, invenerunt Doctores A. Stuxberg et H. Thée!, Auctore F. A. Smitt. (Öfversigt af Kongl. Vetenskap Akademiens Förhandlingar 1878, No. 3, Stockholm.) 8vo, pp. 16.

Brehm's Thierleben. Band 4, Helt, 4-8. Leipsig, 1878. New York, B. Westerman & Co. 8vo. 40 cents a heft.

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GENERAL NOTES.

BOTANY.

NEW CLASSIFICATION OF THE VEGETABLE KINGDOM.—At the close of his recent work, *La Morfologia Vegetale*, Professor Caruel of Pisa proposes the classification of the vegetable kingdom into five primary groups as under, viz.:

1. *Phanerogamia*.—Every individual is trimorphic. The first form is neutral, and is capable of indefinite development, and of organic reproduction, principally by means of buds. The organic form gives rise, through the medium of the flower, to the two other sexual forms, male and female, which have only a definite development. The male form or pollen is thalloid; the female form or gemmule (ovule) is cormoid; this last produces first, a pro-embryo as the result of the fecundation, by the fovilla of the pollen, of an oosphere contained in a closed oögonium, and finally the embryo of the neutral form which develops at the extremity of the pro-embryo, and in the same direction. In the subdivision of *Phanerogamia*, Professor Caruel discards the distinction between *Gymnospermia* and *Angiospermia*, retaining as the two primary classes *Monocotyledons* and *Dicotyledons*, and giving the higher rank to the former.

2. *Schistogamia*, including *Characeæ* only. These are also trimorphic; but the male sexual form consists of vermiform phy-

tozoa (antherozoids) instead of pollen-grains, formed in an antherocyst (antheridium), differing in structure from the anther; the female form consists of an oögonium (archegonium) comparable to a gemmule, but naked; the neutral form springs directly from the oöspore, which, on germinating, produces the embryo transversely.

3. *Prothallógamia* or Vascular Cryptogams.—These are also trimorphic. The neutral form does not produce the two sexual forms, but spores, these, on germinating, are transformed into sexual prothallia, with archegonic and naked oöspores, and vermiform phytozoa contained in antheridia; the oöspore gives rise transversely to the embryo of the neutral form. The Prothallógamia are divided into *Heterosporæ* and *Isosporæ*.

4. *Bryogamia* (synonymous with *Muscineæ*).—The distinguishing character of this group is the indefinite power of development of the (female) sexual individual, together with the definite development of the neutral form or sporogonium. A consequence of this is the repeated and continued fecundation of which the female form is capable, which distinguishes the Bryogamia from the three preceding groups. The embryo springs directly from the oöspore; the male forms are phytozoa. The group is divided into *Musci* and *Hepaticæ*.

5. *Gymnogamia* (Thallophyta or Cellular Cryptogams).—The simplest Gymnogamia possesses only a single form which is reproduced organically by fission, by conidia and sporidia, or by gamogenesis, but without any sexual differentiation. In others there is sexual differentiation into male and female forms; a few have also a third neutral form, when the oöspore produces zoöspores, instead of passing directly into the female form. They resemble the *Bryogamia* in the definite development of the neutral form, and the indefinite development of the female form, but differ in the zoöspore-like form of the phytozoa, and in the structure of the oögonium, which is isolated and naked, and does not form parts of an archegonium. Professor Caruel altogether discards the old classification of Thallophytes into Algæ, Fungi, and Lichens, but does not propose any other in its place, and thinks it probable, that as our knowledge of some of its forms increases, it will be broken up into several primary groups. He considers it would be an advantage if the term Cryptogamia were altogether disused.—*Alfred W. Bennett*.

RARE FERNS IN CENTRAL FLORIDA.—On December 26, 1877, I met with *Blechnum serrulatum* Michx. in profusion at the north-west end of Santa Fe Lake, Florida. Subsequently I found it, equally abundant, on the opposite shore of the same lake. In both cases it grew in low hummock land, in the latter instance surrounded with magnificent specimens of the *Magnolia grandiflora* (trunks two feet in diameter), while in its neighborhood grew rather sparingly the rare and graceful *Polypodium plumula* H. B. K.

hitherto found, I believe, only at Tampa Bay. This additional station for the latter fern, so far in the interior, is of interest in its distribution. The former fern is recorded in Chapman's Flora as being found in Florida, on authority of Michaux and Buckley; while in William Edwards' Catalogue of North American Ferns, 1876, corrected by Professor D. C. Eaton, the habitat of "near Enterprise, Florida" (on the St. John's River) is given, so that I presume it is considered uncommon, if not rare.

I may also mention that I met with *Ophioglossum nudicaule* L. f. in an old field about one mile to the westward of Santa Fe Lake. I observed a habit in this diminutive fern (it is often barely one inch in height) which may not be generally known. I noticed that the spike or fertile part comes up wrapped in the winged petiole of the sterile part of the frond, and so remains, completely enclosed, till well advanced in its development.—*Henry Gillman, Waldo, Florida.*

LYCOPodium CERNUUM IN FLORIDA.—In November, 1877, I found this rather elegant species growing in abundance on the sides of a damp, deep ditch, at Santa Fe Lake, Florida. It seemed quite at home, developing many protean forms and luxuriant vegetation. But it grew only where the clay had been exposed or thrown out in constructing the ditch, which is many years old. Dr. Chapman in his "Flora of the Southern United States," does not include *L. cernuum* L.; but I believe it is common in the tropics. I am not aware that it has hitherto been discovered within the United States. At any rate, it is interesting to find it so well established on these high lands in Central Florida. I also find frequent, in the low pine barrens in this same neighborhood, *L. imundatum* L. var. *pinnatum* Chapm., hitherto recorded as from "near the coast, West Florida."—*Henry Gillman, Waldo, Florida.*

BOTANICAL NEWS.—The *Bulletin* of the Torrey Botanical Club for July and August contains some rambling notes on collecting and preserving herbarium specimens which will be of value to young botanists. Professor Eaton records the discovery of a rare and curious moss, *Conomitium julianum*, at Hamden, Connecticut. A farther note on the bibliography of North American lichenography by Mr. H. Willey, and a critical, lengthy notice of Rafinesque's monograph of *Lechea*, together with a notice by O. R. Willis of the occurrence of *Calluna vulgaris* at Egg Harbor, New Jersey, with references to other new New Jersey plants, complete the number.

The seventy-sixth fasciculus of the Flora Brasiliensis consists of the *Lemnaceæ* by Hegelmaier, and the *Araceæ* by Engler. The morphology and anatomy of the duck weeds, by the former author, is illustrated by a fine plate. The flowers and fruit of *Lemna* (*Spirodela*) *polyrrhiza* are drawn from North American

specimens, as all those seen from Brazil are, like the British ones, barren. Messrs. Godwin and Salvin's forthcoming *Biologia Centrali-Americana* will contain a full catalogue of the known species of plants of Central America by Mr. Hemsley.

Pringsheim's *Jahrbuch für Wissenschaftliche Botanik* for 1878, contains a paper by Woronin on Plasmodiophora, the cause of "anbury" in turnips. R. Sadebeck writes on the development of the embryo of the horsetails (*Equisetum*) and H. Banke on the germination of the *Schizæaceæ*.

In the *Botanische Zeitung*, H. Nebelung continues his spectroscopic researches on the coloring matters of some fresh water *Algæ*; A. DeBary discourses on a apogamous ferns, and the phenomena of apogamy, in general.

The French Academy has elected as corresponding members of the section of Botany, Dr. Asa Gray and Mr. Charles Darwin.

ZOÖLOGY.¹

THE RIGHT WHALE OF THE SOUTHERN EUROPEAN SEAS.—Prof. Gasco, of Genoa, has recently published, through the Royal Academy of Sciences of Naples, a full description of the external and internal characters of a right whale which was taken near Taranto, in 1877. This specimen was regarded by Dr. Capellini as representing a species new to science, which he named *Balæna tarentina*. Prof. Gasco has concluded on the other hand that it is a specimen of the *B. cisarctica* Cope, thus confirming the supposition of Prof. Cope that the species of the eastern coast of North America is identical with that of the Gulf of Biscay. The specimen is not adult, and of about the same age and size as the one captured near Philadelphia about 1864.

M. Fischer, of Paris, after a study of the remains and descriptions of the whales of the Temperate and Southern European coasts within his reach, has found the following to be related forms: The *Balæna cisarctica* Cope, and the Saw of the American coast; the Nordkaper and *Balæna biscayensis* of the European coast; the *Hunterius temminckii* Gray, of the Cape of Good Hope, and the subfossil *Hunterius swedenborgii* Lillj., of Gothland and *Balæna lananoni* of Paris. He concludes that these are not all identical, but belong to two divisions, perhaps of one species each, which are characterized, the one by the very small head, bifid first rib, and the very thick and almost cylindrical inferior extremities of the ribs; the second by a larger head, simple first and flattened following ribs. To the former belong the *Hunterii* and the *B. biscayensis*; to the latter the *A. cisarctica* and the Saw.

A NEW SPECIES OF GORILLA.—An adult female of a species of Gorilla was received in Paris about a year ago, and became the

¹The departments of Ornithology and Mammalogy are conducted by Dr. ELLIOTT COUES, U. S. A.